IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Gopal B. Avinash et al.	§	Group Art Unit:	3737
Serial No.: 10/723,859	§	Confirmation No.:	9691
Filed: November 26, 2003	§	Examiner:	Mehta, Parikha Solanki
For: METHOD AND SYSTEM TO REDUCE MOTION RELATED IMAGE ARTIFACTS DURING BREATH HOLDING	§	Atty. Docket:	139943-1/YOD/RAR (GEMS:0256)

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December 28, 2007	**/John Rariden/**
Date	John M. Rariden

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 1.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on October 23, 2007 and received by the Patent Office on October 29, 2007. Appellants filed a Pre-Appeal Brief Request for Review with the Notice of Appeal. In a Notice of Panel Decision from Pre-Appeal Brief Review mailed November 30, 2007, the Office reset the time period for filing an appeal brief to one month from the mailing date of the decision, i.e., December 30, 2007. Consequently, Appellants respectfully submit that the present Appeal Brief is timely.

The Commissioner is authorized to charge the requisite filing fee of $510.00, and any additional fees which may be required, to Deposit Account No. 07-0845; Order No. 139943-1/YOD/RAR (GEMS:0256).

1. REAL PARTY IN INTEREST

The real party in interest is GE Medical Systems Global Technology Company, LLC, the Assignee of the above-referenced application by virtue of the Assignment to GE Medical Systems Global Technology Company, LLC, a subsidiary of General Electric Company, by Gopal B. Avinash and Prathyusha K. Salla, recorded at reel 014757, frame 0062, on November 26, 2003. Accordingly, General Electric Company, as the parent company of the Assignee of the above-referenced application, will be directly affected by the Board's decision in this Appeal.

2. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellants' legal representative in this Appeal.

3. STATUS OF CLAIMS

Claims 1-32 and 35 are currently pending, are currently under final rejection and, thus, are the subject of this Appeal.

4. STATUS OF AMENDMENTS

Appellants have not submitted any amendments subsequent to the Final Office Action mailed on July 23, 2007. Consequently, there are no outstanding amendments to be considered by the Board.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates generally to the correction and/or prevention of motion-related artifacts in medical imaging. *See* Application, p. 1, lines 6-7. More specifically, the present invention relates to the use of a respiration sensor during medial imaging to facilitate image acquisition or selection during intervals of breath holding. *See id.* at p. 1, lines 7-9.

The Application contains four independent claims, namely claims 1, 13, 25, and 35, all of which are the subject of this Appeal. The subject matter of these claims is summarized below.

With regard to the aspect of the invention set forth in independent claim 1, discussions of the recited features of claim 1 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a method for gating image data. The method comprises acquiring (e.g., 46, 60) a set of motion data (e.g., 50) during a breath hold. *See, e.g., id.* at p. 10, line 19 – p. 11, line 1; p. 13, lines 4 – 7; *see also* FIGS. 2, 3, & 5. Further, the method comprises deriving (e.g., 52) one or more attributes of motion from the set of motion data (e.g., 50). *See, e.g., id.* at p. 10, lines 19 – 27; p. 11, lines 1 – 8; p. 13, lines 25 – 28; *see also* FIGS. 2, 3, & 5. The method further comprises deriving (e.g., 54) an initiation threshold and a termination threshold from the one or more attributes. *See, e.g., id.* at p. 11, lines 5 – 17; p. 13, lines 25 – 28; *see also* FIGS. 2, 3, & 5. Further, the method comprises generating (e.g., 56) a set of gated image data (e.g., 58) using one or more gating intervals derived from the initiation threshold and the termination threshold. *See, e.g., id.* at p. 11, line 30 – p. 12, line 14; *see also* FIGS. 2, 3, & 5. Finally, the method comprises displaying or storing an image generated from the set of gated image data. *See, e.g., id.* at p. 5, lines 20 – 24.

With regard to the aspect of the invention set forth in independent claim 13, discussions of the recited features of claim 13 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a computer program, provided on one or more computer readable media, for gating image data. The computer program comprises a routine for acquiring (e.g., 46, 60) a set of motion data (e.g., 50) during a breath hold. *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 10, line 19 – p. 11, line 1; p. 13, lines 4 – 7; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5. Further, the computer program comprises a routine for deriving (e.g., 52) one or more attributes of motion from the set

of motion data (e.g., 50). *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 10, lines 19 – 27; p. 11, lines 1 – 8; p. 13, lines 25 – 28; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5. The computer program further comprises a routine for deriving (e.g., 54) an initiation threshold and a termination threshold from the one or more attributes. *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 11, lines 5 – 17; p. 13, lines 25 – 28; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5. Further, the computer program comprises a routine for generating (e.g., 56) a set of gated image data (e.g., 58) using the initiation threshold and the termination threshold. *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 11, line 30 – p. 12, line 14; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5.

With regard to the aspect of the invention set forth in independent claim 25, discussions of the recited features of claim 25 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to an imaging system (e.g., 10). The imaging system (e.g., 10) comprises an imager (e.g., 12) configured to generate a plurality of signals representative of one or more structures within a region of interest. *See, e.g., id.* at p. 4, lines 14 – 20; *see also* FIG. 1. The imaging system (e.g., 10) further comprises data acquisition circuitry (e.g., 18) configured to acquire the plurality of signals. *See, e.g., id.* at p. 5, lines 2 – 9; *see also* FIG. 1. Further, the imaging system (e.g., 10) comprises data processing circuitry (e.g., 20) configured to process the plurality of signals. *See, e.g., id.* at p. 5, lines 11 – 24; *see also* FIG. 1. The imaging system (e.g., 10) further comprises system control circuitry (e.g., 16) configured to operate at least one of the imager (e.g., 12) or the data acquisition circuitry (e.g., 18) and to generate a set of gated image data (e.g., 58) from the plurality of signals using one or more gating intervals. *See, e.g., id.* at p. 4, lines 14 – 31; p. 5, lines 11 – 24; p. 11, line 30 – p. 12, line 14; *see also* FIGS. 1, 2, 3, & 5. The one or more gating intervals are derived from an initiation threshold and a termination threshold. *See, e.g., id.* at page 1, lines 23-26; page 4, lines 4-7; page 11, lines 11-15. In addition, the initiation threshold and the termination threshold are derived from one or more motion attributes derived from a set of motion data acquired during a breath hold. *See, e.g., id.* at page 11, lines 5-17. Further, the

imaging system (e.g., 10) comprises an operator workstation (e.g., 22) configured to communicate with the system control circuitry (e.g., 16) and to display one or more images generated from the gated image data (e.g., 58). *See, e.g., id.* at p. 5, line 26 – p. 6, line 25; p. 11, line 30 – p. 12, line 14; *see also* FIGS. 1, 2, 3, & 5.

With regard to the aspect of the invention set forth in independent claim 35, discussions of the recited features of claim 35 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to an imaging system (e.g., 10). The imaging system (e.g., 10) comprises a means for acquiring (e.g., 46, 60) a set of motion data (e.g., 50) during a breath hold. *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 10, line 19 – p. 11, line 1; p. 13, lines 4 – 7; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5. Further, the imaging system (e.g., 10) comprises a means for deriving (e.g., 52) one or more attributes of motion from the set of respiratory motion data (e.g., 50). *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 10, lines 19 – 27; p. 11, lines 1 – 8; p. 13, lines 25 – 28; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5. The imaging system (e.g., 10) further comprises a means for deriving (e.g., 54) an initiation threshold and a termination threshold from the one or more attributes. *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 11, lines 5 – 17; p. 13, lines 25 – 28; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5. Further, the imaging system (e.g., 10) comprises a means for generating (e.g., 56) a set of gated image data (e.g., 58) using one or more gating intervals derived from the initiation threshold and the termination threshold. *See, e.g., id.* at p. 4, lines 26 – 31; p. 6, lines 2 – 7; p. 11, line 30 – p. 12, line 14; p. 14, lines 11 – 21; *see also* FIGS. 2, 3, & 5.

A benefit of the invention, as recited in these claims, is the ability to detect and/or measure the duration of a breath-hold during image acquisition. The present technique provides for the measurement of the motion of the chest wall during image acquisition, using sensor or image-based techniques. This technique is used in order to minimize or prevent artifacts related to respiration and is sometimes referred to as respiration gating, i.e., acquiring (that is, prospectively gating) or selecting (that is, retrospectively gating)

image data associated with certain phases of the respiratory cycle. The motion may be analyzed in real time and used to start and stop acquisition, either automatically or via notification of the operator. The decision to start and stop acquisition may be based on a metric derived from the analysis, such as an initiation threshold and a termination threshold. These motion thresholds, which may be based on temporal differences, displacement, periodicity, impedance, and so forth, may be compared to current motion data to determine the onset and end of breath-holds or of a quiet period corresponding to a low respiratory motion interval within the breath-hold. As such, the present invention facilitates image acquisition during certain respiratory phases, as determined by respiratory motion data. *See, e.g., id.* at p. 1, lines 23-26; p. 2, lines 15 – 22; p. 4, lines 4-7; p. 11, lines 11-15.

The invention is thus clearly different and distinct from the prior art, as discussed below.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

First Ground of Rejection for Review on Appeal:

Whether the Examiner has met his burden in establishing that claims 1-8, 10-20, 22-32, and 35 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,363,844 to Riederer et al. (hereinafter "the Riederer reference").

Second Ground of Rejection for Review on Appeal:

Whether the Examiner has met his burden in establishing that claims 9 and 21 are unpatentable under 35 U.S.C. § 103(a) over the Riederer reference.

7. ARGUMENT

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under 35 U.S.C. §§ 102 and 103. Accordingly, Appellants respectfully request full and favorable consideration by the Board, as

Appellants strongly believe that claims 1-32 and 35 are currently in condition for allowance.

A. **Ground of Rejection No. 1:**

The Examiner rejected claims 1-8, 10-20, 22-32, and 35 under 35 U.S.C. § 102(b) as being anticipated by the Riederer reference. Appellants respectfully traverse this rejection. The Examiner, contrary to legal precedent (e.g., the *Phillips* case discussed below), has apparently ignored or given little weight to the present specification and improperly relied upon extrinsic evidence to define a term which had already been fully explained in the present specification. In addition, the Examiner made the present rejection due in part to this misconstruction. As will be shown below, the Riederer reference does not, in fact, anticipate claims 1-8, 10-20, 22-32, and 35.

Legal Precedent

During patent examination, the pending claims must be given an interpretation that is reasonable and consistent with the specification. *See In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969); *see also* M.P.E.P. §§ 608.01(o) and 2111. Indeed, the specification is "the primary basis for construing the claims." *See Phillips v. AWH Corp.*, 75 U.S.P.Q.2d 1321, 1326 (Fed. Cir. 2005). One should rely heavily on the written description for guidance as to the meaning of the claims. *See id.*

Furthermore, in *Phillips v. AWH Corp.*, the Federal Circuit held that dictionaries or other similar sources may be used to assist in the interpretation of claim language, but must take an inferior role to the meanings of claim terms as they would be understood by one of ordinary skill in the art in view of the intrinsic evidence. *See, e.g., id.* at 1331. The court further noted that the usage of a term in the specification is the "single best guide to the meaning of [a] disputed term." *See id.* at 1332.

Interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *See In re Cortright*, 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. "The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." *See Collegenet, Inc. v. ApplyYourself, Inc.*, No. 04-1202, -1222, 1251, at 8-9 (Fed. Cir. August 2, 2005) (quoting *Phillips*).

Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). Every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Indeed, the prior art reference also must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Legal Error: The Examiner Improperly Relied Upon Extrinsic Evidence to Define a Term Already Fully Explained in the Present Specification

The Examiner, contrary to legal precedent (e.g., the *Phillips* case discussed above), has apparently ignored or given little weight to the present specification. Instead, the Examiner has improperly relied upon extrinsic evidence in construing the language of the claims. In particular, independent claims 1, 25, and 35 recite, in generally similar language, generating a set of gated images using one or more gating intervals derived from an initiation threshold and a termination threshold. In addition, independent claims 1, 13, 25, and 35 all recite, in generally similar language, that the termination threshold is derived from one or more attributes of motion from a set of motion data acquired during a breath hold. This is further clarified by reference to the present application where it is explained that the termination threshold is determined based on motion data and that the gating intervals are derived from the initiation and termination thresholds. *See, e.g.,* Application, page 1, lines 23-26; page 4, lines 4-7; page 11, lines 11-15. For instance,

gating intervals may occur when pulmonary motion is minimal, such as subsequent to an exhalation but prior to an inhalation. *Id.,* page 4, lines 4-7. Therefore, it is clear from the claims, and reinforced by the specification, that gating intervals are determined based upon motion data (e.g., when motion slows to a certain level or speeds up to a certain level).

In spite of the apparent sufficiency of the claim language and of the discussion in the specification, the Examiner has relied upon extrinsic evidence to define the term "gate." Specifically, the Examiner cited Merriam Webster's dictionary definition of the term "gate" as "a device (as in a computer) that outputs a signal when specified input conditions are met <*logic* gate>." Final Office Action, page 2 (emphasis in original). From this extrinsic evidence the Examiner surmised, in obvious hostility to both the claim language and the teachings of the specification, that the term "gate" should be interpreted to mean "any interval in which specified conditions for imaging are met," despite the plain language of each independent claim relating the initiation and termination thresholds of the gating intervals to derived motion attributes. *Id.* at 3 (emphasis added). Thus, the Examiner has relied upon extrinsic evidence to justify an overly expansive interpretation of the term "gate" that is inconsistent not only with the teachings of the present specification, but with the plain language of the claims themselves.

The Examiner further proceeded to use this interpretation of the term "gate" to assert that the Riederer reference teaches a gating interval as claimed despite the fact that the Riederer reference instead appears to teach the use of an imaging interval which continues for a set time period (e.g., up to twenty seconds) before terminating. *See, e.g.,* Riederer, col. 2, lines 3-13; col. 5, lines 41-43. In other words, the Riederer reference does not appear to teach the use of gating intervals derived from motion data, as presently claimed, but instead based on a set time interval, regardless of motion. In summation, the Examiner's use of extrinsic evidence, here a general purpose dictionary, to define terms which the specification clearly explains constitutes legal error. More precisely, the

dictionary definition of the term "gate" relied upon by the Examiner is associated with electronics in general and bears only a tangential relation to the meaning understood by those skilled in the art in the specific field of imaging, as discussed in the specification.

Deficiencies of the Riederer Reference: Independent Claims 1, 13, 25, and 35

Further, even if the Examiner's present claim construction was not found erroneous, the Riederer reference relied upon by the Examiner still appears to be deficient. In particular, independent claims 1, 13, 25, and 35 each generally recite deriving a termination threshold from one or more motion attributes. The Riederer reference, however, does not appear to disclose such a termination threshold derived from one or more attributes of motion. Instead, the Riederer reference appears to disclose that once data acquisition is initiated, it continues for a set time period (e.g., up to twenty seconds) before terminating. *Id.* In other words, there is no termination threshold based on motion in the Riederer reference, and termination of data acquisition instead appears to be based upon a set time (which appears to correspond to the projected length of a breath-hold) elapsing. *Id.* Indeed, it appears to be assumed by the Riederer reference that the patient will merely continue to hold still during a breath-hold until image acquisition is complete so there is no reason why the Riederer reference would disclose a termination threshold based on motion. *Id.*, col. 6, lines 62-66.

However, the Examiner stated that "Riederer ('844) terminates imaging when the diaphragm is moving, which accordingly constitutes a termination threshold based on motion." Final Office Action, page 2. Unfortunately, the Examiner did not provide a specific reference within the Riederer reference to support this conclusory statement. *Id.* Furthermore, upon a close reading of the Riederer reference, Appellants are unable to find any suggestion that imaging terminates when the diaphragm begins moving. To the contrary, as noted above, all instances in the Riederer reference appear to characterize the data acquisition as continuing for a set time period. Riederer, col. 2, lines 3-13; col. 5, lines 41-43. To the extent that the Reiderer reference discusses diaphragm motion, it is to provide visual feedback to the patient, allowing the patient to suspend respiration

consistently, i.e., to hold their breath with their diaphragm in a consistent position so that the image acquisition can be initiated. *Id.*, Abstract; col. 2, lines 3-7. If, indeed, the Reiderer reference does teach the termination of imaging based upon the motion of a diaphragm, Appellants have respectfully requested that the Examiner provide a citation to this teaching, as required under 37 C.F.R. § 1.104(c)(2). At this time, however, no such citation has been provided and the Appellants can only conclude that the Examiner cannot support the present rejection.

Dependent Claims 2-12, 14-24, and 26-32

The present dependent claims are believed to be allowable due to their dependence from the independent claims discussed above. In addition, however, Appellants note that the present dependent claims 2-12, 14-24, and 26-32 are also believed to be allowable for the subject matter they separately recite. For example, dependent claims 6 and 18 generally recite the selection of a set of gated image data from a set of image data. Such subject matter appears to be absent from the Riederer reference. Further, in view of the subject matter described in the Riederer reference, one would not expect such subject matter to be disclosed. In particular, the Riederer reference appears to relate to the initiation of acquisition of image data based on diaphragm location, i.e. differential acquisition. *Id.*, col. 5, lines 26-41, 48-50; col. 6, lines 29-66. As recited in claims 6 and 18, however, the set of gated image data is selected from a set of image data, i.e., selection is retrospective based on already acquired data. In other words, the recitations of claims 6 and 18 involve selecting a set of gated data from a larger set of image data, i.e., the acquisition isn't differential, the selection of a subset of gated data from a larger set of image data is. Such subject matter appears to be entirely absent from the Riederer reference.

Likewise, dependent claims 10 and 22 recite the act of determining if one or more scan parameters are satisfied. Such subject matter is discussed in the specification at page 15, line 6 to page 16, line 15. This subject matter also appears to be entirely absent from the Riederer reference. The Examiner summarily dismissed this argument stating

that "[i]t is noted that the features upon which Applicant relies (i.e. matter in pages 15 and 16 of the specification) are not recited in the rejected claim(s)." Final Office Action, page 2. However, clearly, such subject matter is recited in claims 10 and 22 and finds support on pages 15 and 16 of the specification, which discloses the use of scan parameters during respiration gating techniques. Application, page 15, line 6 – page 16, line 15. Such subject matter appears to be entirely absent from the Riederer reference.

In view of the various deficiencies of the Riederer reference noted above, no *prima facie* case of anticipation is believed to exist with regard to independent claims 1, 13, 25, and 35. Furthermore, those claims depending from independent claims 1, 13, 25, and 35 are believed to be allowable at least for their dependence from their respective independent claims.

B. **Ground of Rejection No. 2:**

The Examiner rejected claims 9 and 21 under 35 U.S.C. § 103(a) as unpatentable over the Riederer reference. Appellants respectfully traverse this rejection.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). To establish a *prima facie* case, the Examiner must show that a combination or modification of references includes *all* of the claimed elements, *and* also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *See Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). Moreover, the Supreme Court has stated that the obviousness analysis should be explicit. *See KSR Int'l Co. v. Teleflex, Inc.,* No. 04-1350, page 14 (U.S., decided April 30, 2007). "[R]ejections based on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *See id.* (quoting *In re Kahn,* 441 F.3d 977,988 (Fed. Cir. 2006)).

Deficiencies of the Rejection

With regard to claims 9 and 21, Appellants respectfully note the deficiencies of the Riederer reference noted above with regard to the discussion related to anticipation. In view of these deficiencies, and in view of the dependence of claims 9 and 21 from the independent claims discussed herein, no *prima facie* case of obviousness is believed to exist with regard to claims 9 and 21.

Conclusion

In view of the above remarks, Appellants respectfully submit that the Examiner has provided no supportable position or evidence that justifies the present improper rejections of claims 1-32 and 35, and has failed to meet his burden in establishing a *prima facie* case that claims 1-32 and 35 are unpatentable. Consequently, Appellants respectfully request that the Board reverse the pending rejections, and submit that all pending claims are in condition for allowance. If the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: December 28, 2007

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8. **APPENDIX OF CLAIMS ON APPEAL**

1. A method for gating image data, comprising the steps of:

acquiring a set of motion data during a breath hold;

deriving one or more attributes of motion from the set of motion data;

deriving an initiation threshold and a termination threshold from the one or more attributes;

generating a set of gated image data using one or more gating intervals derived from the initiation threshold and the termination threshold; and

displaying or storing an image generated from the set of gated image data.

2. The method as recited in claim 1, wherein acquiring the set of motion data comprises acquiring the set of motion data from at least one of a set of pre-acquisition image data, a set of image data or one or more sets of sensor data.

3. The method as recited in claim 1, wherein acquiring the set of motion data comprises measuring at least one of a displacement, a pressure, an acceleration, or a velocity via one or more non-electrical sensors.

4. The method as recited in claims 1, wherein acquiring the set of motion data comprises measuring at least one of an electrical activity indicating a muscular contraction or a change in electrical impedance via two or more electrical sensors.

5. The method as recited in claim 1, wherein generating the set of gated image data comprises acquiring the set of gated image data using an imaging system such that acquisition begins when a first measurement of motion decreases below the initiation threshold and acquisition ceases when a second measurement of motion increases above the termination threshold.

6. The method as recited in claim 1, wherein generating the set of gated image data comprises selecting the set of gated image data from a set of image data such that selection begins when a first measurement of motion decreases below the initiation threshold and selection ceases when a second measurement of motion increase above the termination threshold.

7. The method as recited in claim 1, wherein the initiation threshold corresponds to the beginning of the breath-hold and the termination threshold corresponds to the cessation of the breath-hold.

8. The method as recited in claim 1, wherein the initiation threshold corresponds to the beginning of a quiet period within the breath hold and the termination threshold corresponds to the end of the quiet period.

9. The method as recited in claim 1, further comprising the steps of:

displaying at least one of the set of motion data, the one or more attributes, the initiation and termination thresholds, or the one or more gating intervals;

determining if at least one of the initiation and termination thresholds or the one or more gating intervals are acceptable; and

replacing at least one of the initiation and termination thresholds or the one or more gating intervals if they are determined to be unacceptable.

10. The method as recited in claim 1, wherein generating the set of gated image data comprises:

determining if one or more scan parameters are satisfied; and

acquiring the set of gated image data if the one or more scan parameters are satisfied.

11. The method as recited in claim 10, further comprising the step of generating a notification if the one or more scan parameters are not satisfied.

12. The method as recited in claim 1, further comprising the step of providing a notification to at least one of a patient or an operator indicating a breath hold status.

13. A computer program, provided on one or more computer readable media, for gating image data, comprising:

a routine for acquiring a set of motion data during a breath hold;

a routine for deriving one or more attributes of motion from the set of motion data;

a routine for deriving an initiation threshold and a termination threshold from the one or more attributes; and

a routine for generating a set of gated image data using the initiation threshold and the termination threshold.

14. The computer program as recited in claim 13, wherein the routine for acquiring acquires the set of motion data from at least one of a set of pre-acquisition image data, a set of image data, or one or more sets of sensor data.

15. The computer program as recited in claim 13, wherein the routine for acquiring measures at least one of a displacement, a pressure, an acceleration, or a velocity via one or more non-electrical sensors.

16. The computer program as recited in claim 13, wherein the routine for acquiring measures at least one of an electrical activity indicating a muscular contraction or a change in electrical impedance via two or more electrical sensors.

17. The computer program as recited in claim 13, wherein the routine for generating acquires the set of gated image data using an imaging system such that acquisition begins when a first measurement of motion decreases below the initiation threshold and acquisition ceases when a second measurement of motion increase above the termination threshold.

18. The computer program as recited in claim 13, wherein the routine for generating selects the set of gated image data from a set of image data such that selection begins when a first measurement of motion decreases below the initiation threshold and selection ceases when a second measurement of motion increase above the termination threshold.

19. The computer program as recited in claim 13, wherein the initiation threshold corresponds to the beginning of the breath-hold and the termination threshold corresponds to the cessation of the breath-hold.

20. The computer program as recited in claim 13, wherein the initiation threshold corresponds to the beginning of a quiet period within the breath hold and the termination threshold corresponds to the end of the quiet period.

21. The computer program as recited in claim 13, further comprising:

a routine for displaying at least one of the set of motion data, the one or more attributes, the initiation and termination thresholds, or one or more gating intervals; and

a routine for replacing at least one of the initiation and termination thresholds or the one or more gating intervals if they are determined to be unacceptable.

22. The computer program as recited in claim 13, wherein the routine for generating determines if one or more scan parameters are satisfied and acquires the set of gated image data if the one or more scan parameters are satisfied.

23. The computer program as recited in claim 22, comprising a routine for generating a notification if the one or more scan parameters are not satisfied.

24. The computer program as recited in claim 13, comprising a routine for providing a notification to at least one of a patient or an operator indicating a breath hold status.

25. An imaging system comprising,

an imager configured to generate a plurality of signals representative of one or more structures within a region of interest;

data acquisition circuitry configured to acquire the plurality of signals;

data processing circuitry configured to process the plurality of signals;

system control circuitry configured to operate at least one of the imager or the data acquisition circuitry and to generate a set of gated image data from the plurality of signals using one or more gating intervals, wherein the one or more gating intervals are derived from an initiation threshold and a termination threshold, wherein the initiation threshold and the termination threshold are derived from one or more motion attributes derived from a set of motion data acquired during a breath hold; and

an operator workstation configured to communicate with the system control circuitry and to display one or more images generated from the gated image data.

26. The imaging system as recited in claim 25, further comprising a sensor-based motion determination system configured to acquire the set of motion data.

27. The imaging system as recited in claim 26, wherein the sensor-based motion determination system measures electrical attributes of one or more organs.

28. The imaging system as recited in claim 26, wherein the sensor-based motion determination system measures non-electrical attributes of one or more organs.

29. The imaging system as recited in claim 28, wherein one or more non-electrical sensors of the sensor-based motion determination system comprise accelerometers, optical markers, displacement sensors, force sensors, ultrasonic sensors, strain gauges, photodiodes, or pressure sensors.

30. The imaging system as recited in claim 25, wherein the system control circuitry generates the set of gated image data by activating at least one of the imager or the data acquisition circuitry based upon the one or more gating intervals.

31. The imaging system as recited in claim 25, wherein the system control circuitry generates the set of gated image data by selectively processing the plurality of signals based upon the one or more gating intervals.

32. The imaging system as recited in claim 25, further comprising a feedback device configured to notify at least one of a patient or an operator of a breath hold status of the patient based upon data from at least one of a sensor-based motion determination system, the data processing circuitry, or the system control circuitry.

33.-34. (canceled)

35. An imaging system, comprising:

means for acquiring a set of motion data during a breath hold;

means for deriving one or more attributes of motion from the set of respiratory motion data;

means for deriving an initiation threshold and a termination threshold from the one or more attributes; and

means for generating a set of gated image data using one or more gating intervals derived from the initiation threshold and the termination threshold.

9. **APPENDIX OF EVIDENCE**

None.

10. **APPENDIX OF RELATED PROCEEDINGS**

None.